

21, seven adult females from the March 8 collection were given the opportunity to feed on a human subject, one fed to complete engorgement and two took partial blood meals. The latter two had consumed considerable sugar water before the opportunity to feed on blood was presented to them. April 1, at midnight, one female fed readily on a human host and obtained almost a complete blood meal. Bites of this species were painful for one-half hour following the bite and large welts appeared at each feeding point. Welts were visible as long as two days following the initial feedings. The above data indicate that this species will feed on a human host, but certainly man is not one of its preferred hosts.

*Culiseta maccrackena* were observed copulating readily in the daytime under laboratory conditions. A male 12 hours of age copulated with a female 2½ days old, in a plastic cylinder 20" x 6.5". No blood meal had been obtained by the female. This pair remained in copulation from 9:45 a.m. until 2:45 p.m. Other pairs remained in copulation for at least two hours.

Males and females approach face to face prior to copulation. After copula is effected, they face in opposite direction. The male has frequently been seen in a vertical position suspended head down, supported only by the genitalia in copula.

In San Bernardino and Riverside counties, *Culiseta maccrackena* breeds in very limited numbers, except for certain isolated pools which may in the winter and spring seasons contain moderate numbers of larvae and pupae. This is in agreement with reports on their breeding in central and northern California.

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## ADDITIONAL COLLECTIONS OF MOSQUITOES FROM WOOD RATS' NESTS

(Diptera: Culicidae)

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*Anopheles freeborni* Aitken has been reported from the nests of *Neotoma fuscipes* Baird (Ryckman and Arakawa 1951).

Four additional species of mosquitoes have been collected from woodrats' nests in California and Mexico. The authors have found mosquitoes in the nests of *Neotoma* from Mt. Diablo, April 2, 1949 to Baja California, Mexico, August 7, 1951.

Species collected from nests of *Neotoma fuscipes* Baird:

*Anopheles freeborni* Aitken, San Timoteo Canyon, Riverside Co., Calif. Nov. 29, 1951, 4 ♀. Dec. 12, 1951, 1 ♀.

*Culiseta inornata* (Williston) San Timoteo Canyon, Riverside Co., Dec. 12, 1951, 4 ♀.

*Culiseta maccrackena* Dyar and Knab, San Timoteo Canyon, Riverside Co., Calif. Feb. 22 and Nov. 29, 1951, one ♀ each collection.

*Culex stigmatosoma* Dyar, five miles south Tijuana, Baja California, Mexico. August 7, 1951, 1 ♀.

*Culex tarsalis* Coquillett San Timoteo Canyon, Riverside, Co., Calif., Nov. 29, 1951, 4 ♀. Dec. 12, 1951, 11 ♀.

The above data are concerned only with the actual specimens returned to the laboratory and do not take into consideration those which frequently escaped.

In the San Timoteo Canyon a careful search has been conducted to find other resting places, but wood rats' nests were the only habitat in which the mosquitoes were found. Those taken during the winter on cold days were apparently taking refuge from the cold inclement weather; however, the collection in Mexico was on a very hot day during the dry season. In the latter situation, *Culex stigmatosoma* was apparently seeking shelter from a dry, hot environment.

The food and dung chamber in which most of the mosquitoes are found affords protection from adverse climatic conditions. It is the opinion of the authors that this recently investigated mosquito habitat is a preferred ecological niche for mosquitoes in certain environmental situations as the San Timoteo Canyon studies have indicated. When surveys of overwintering adult mosquitoes are conducted, the nests of *Neotoma* should be inspected.

#### LITERATURE CITED

RYCKMAN, R. E. AND K. Y. ARAKAWA

1951. *Anopheles freeborni* hibernating in wood rat's nest. Pan-Pacific Ent. 27:172.